

Application No. 10/565,598
Amendment dated September 15, 2008
Reply to Office Action of May 13, 2008

REMARKS

**Reconsideration And Allowance
Are Respectfully Requested.**

Claims 1-19 and 21-24 are currently pending. Claims 1, 5-10, 13, 14, 18, 19 and 21-23 5 have been amended. Claims 20 and 25 have been canceled. No claims have been added. No new matter has been added. Reconsideration is respectfully requested.

With regard to the outstanding Office Action, claims 1 and 23 have been objected to based upon informalities. These informalities have been addressed and Applicants respectfully request the objections be withdrawn.

In addition, claims 20-24 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite in that it fails to point out what is included or excluded by the claim language. This rejection has also been addressed and Applicants respectfully request the rejections relation thereto be withdrawn.

With regard to the rejections based upon cited references, claims 1-3, 6 and 9 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent Application Publication No. 2003/0112186 to Sanchez et al. ("Sanchez"). Claims 1 and 5-8 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent Application Publication No. 2003/0142036 to Wilhelm et al. ("Wilhelm"). Claims 1 and 4 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent Application Publication No. 2003/0052834 to Sievenpiper et al. ("Sievenpiper"). Claims 10-13 and 16 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Japanese Publication No.

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04269001 to Iwai ("Iwai"). Claims 1, 13, 18 and 19 stand rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 7,002,517 to Noujeim ("Noujeim"). Claims 20-24 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Japanese Publication No. 2002374123 to Yamamoto ("Yamamoto"). Claim 25 stands rejected under 35 U.S.C. § 102(b) as being anticipated by German Patent No. 3210895 to Rembold ("Rembold"). Claims 14 and 15 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Noujeim in view of Iwai. Finally, claim 17 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Noujeim in view of U.S. Patent No. 5,557,286 to Varadan ("Varadan"). These rejections are respectfully traversed in view of the preceding amendments and the remarks which follow.

As amended, claim 1 now defines a device for controlling electromagnetic radiation emitted by a structure. The device includes a first surface and a second reactive surface defining a cavity. The second reactive surface comprises a lattice array of conductors disposed on a dielectric surface such that the displacement between a conductor and any other conductor adjacent to it is small compared to the wavelength of the electromagnetic radiation thereby causing the array of conductors to represent an effectively continuous conductive surface to the electromagnetic radiation. The surface impedance of the second reactive surface is reactive. The device further includes an emitter generating electromagnetic radiation between the first surface and the second reactive surface. The electromagnetic radiation within the cavity is radiated into the air through the second reactive surface.

When compared to the various references utilized in rejection independent claim 1, that is, Sanchez, Wilhelm, Sievenpiper, Iwai and Noujeim, it is Applicants' opinion the amendments to this claim now overcome the references. In particular, neither Sanchez nor Sievenpiper disclose or

suggest the claimed cavity with an emitter positioned between a first ϵ surface and a second reactive surface. As to Wilhelm, Wilhelm at a minimum fails to disclose the claimed cavity with an emitter positioned therebetween. In addition, Wilhelm is devoted to a broadband or multiband frequency selective surface and is unrelated to the claimed device of the present invention. With regard to the citation of Iwai, Iwai fails to disclose the utilization of an array of conductors formed in a grid. Rather, Iwai discloses a two dimensional surface impedance structure which is very different from that claimed in accordance with the present invention. As a result of the two dimensional surface impedance utilized by Iwai, a single polarization leaky wave structure is produced rather than the dual polarized system of the present invention. As to the application of Noujeim, Noujeim describes a classic leaky wave antenna with strips which result in single polarization elements containing active elements for control. As with the other references, Noujeim also does not meet the claim limitations of the present invention. With the foregoing in mind, it is Applicants' opinion claim 1 overcomes the cited references and Applicants respectfully request the rejections relating thereto be withdrawn. As to those claims dependent upon independent claim 1, they are also believed to overcome the references of record for at least the reasons presented above.

With regard to claim 10, claim 10 now defines an antenna comprising a conductive equipotential surface. The antenna includes a device for controlling electromagnetic radiation emitted by a structure. The device has a reactive element comprising a lattice array of conductors disposed on a dielectric surface such that the displacement between a conductor and any other conductor adjacent to it is small compared to the wavelength of the electromagnetic radiation thereby causing the lattice array of conductors to represent an effectively continuous conductive

surface to the electromagnetic radiation. The surface impedance of the conductive surface is reactive, the reactive element of which is disposed parallel to the equipotential surface. An emitter is further provided for emitting electromagnetic radiation that is guided between the equipotential surface and the reactive element. An actuating mechanism is provided for adjusting the displacement between the equipotential surface and the reactive element so that the angle of propagation of a beam of electromagnetic radiation that leaks through the reactive element can be varied.

With regard to the references cited against originally filed claim 10, that is, Iwai, it is Applicants' opinion the amended claim now overcomes this reference. In particular, Iwai, based upon the Abstract, discloses a single polarization leaky wave structure as opposed to the lattice structure of the claimed invention. As such, Iwai fails to disclose an array of conductors forming a grid. With this in mind, Iwai describes a single polarization leaky wave structure rather than the dual polarized structure claimed in accordance with the present invention. With this in mind, Applicants respectfully request the rejection of claim 10 be withdrawn.

As to those claims dependent upon independent claim 10, they are also believed to overcome the references of record for at least the reasons presented above.

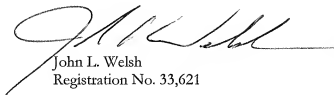
With regard to claim 13 it has been rewritten in independent form and includes all of the limitations of claim 1 plus it includes additional antenna structural limitations which defines over the prior art. As such claim 13 and 14-19 which depend therefrom are believed to be allowable for at least the reasons set forth with regard to claim 1.

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Further, and with regard to claims 21-24, these claims have been substantially amended, and now depend from independent claim 1. As such, and for the reasons discussed above, it is Applicants' opinion this rejection has been overcome and Applicants respectfully request that it be withdrawn.

It is believed that this case is in condition for allowance and reconsideration thereof and early issuance is respectfully requested. If it is felt that an interview would expedite prosecution of this application, please do not hesitate to contact Applicants' representative at the below number.

Respectfully submitted,



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